IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: VINCENT M. CALLAGHAN ET AL. Docket No.: 01-104

Serial No.: Examiner :

Filed : Art Unit :

For : FUEL CELL POWER PLANT

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INFORMATION DISCLOSURE STATEMENT

Hon. Commissioner of Patents & Trademarks
United States Patent & Trademark Office
Washington, D.C. 20231

Dear Sir:

In accordance with the requirements of 37 CFR 1.97 and 1.98, Applicant hereby submits the prior art listed hereinbelow, copies enclosed.

U.S. Patent 4,473,622 issued September 25, 1984 entitled RAPID STARTING METHANOL REACTOR SYSTEM, By Paul J. Chludzinski et al. The patent discloses a methanol-to-hydrogen cracking reactor for use with a fuel cell vehicular power plant. The system is particularly designed for rapid start-up of the catalytic methanol cracking reactor after an extended shut-down period, i.e., after the vehicular fuel cell power plant has been inoperative overnight. Rapid system start-up is accomplished by a combination of direct and indirect heating of the cracking catalyst. Initially,

liquid methanol is burned with a stoichiometric or slightly lean air mixture in the combustion chamber of the reactor assembly. The hot combustion gas travels down a flue gas chamber in heat exchange relationship with the catalytic cracking chamber transferring heat across the catalyst chamber wall to heat the catalyst indirectly. The combustion gas is then diverted back through the catalyst bed to heat the catalyst pellets directly. When the cracking reactor temperature reaches operating temperature, methanol combustion is stopped and a hot gas valve is switched to route the flue gas overboard, with methanol being fed directly to the catalytic cracking reactor. Thereafter, the burner operates on excess hydrogen from the fuel cells.

U.S. Patent 4,474,582 issued October 2, 1984 entitled TRIM CONTROL SYSTEM FOR PARTIAL OXIDATION GAS GENERATOR, By Roger M. Dille et al. Trim control of a partial oxidation gas generator for the production of synthesis gas, reducing gas, or fuel gas is effected by two improved control schemes which are automatically operated separately or in sequence. The control systems include sensors sensing the flow rate of the feedstreams and analyzers which provide signals corresponding to the wt.% carbon in the effluent gas quench cooling and scrubbing water for use in controlling the particulate carbon in the effluent gas stream, and/or signals corresponding to the mole fractions of CO_2, CH_4, CO

and H_2 (dry basis) in the cooled and cleaned effluent gas stream for use in controlling the temperature in the reaction zone. The signals from the sensors and analyzers are provided to the system control unit which computes values that represent the relative difference between the actual and desired carbon-make and/or the actual temperature in the reaction zone, and the relative difference between the actual and desired temperature in the reaction zone. The actual temperature is determined as a function of the methane equilibrium constant. These values are automatically compared with set point values and when adjustments are necessary, signals from the system control unit are provided to a flow rate regulating means which adjusts the flow rate of the free-oxygen containing gas by a small determined amount for control of the particulate carbon and/or to a flow rate regulating means which adjusts the flow rate of the free-oxygen containing gas by a small determined amount for control of the particulate carbon and/or to a flow rate regulating means which adjusts the flow rate of the temperature moderator by a small determined amount for control of the temperature in the reaction zone.

U.S. Patent 5,221,524 issued June 22, 1993 entitled APPARATUS FOR PRODUCING HYDROGEN, By Tomoki Eguchi. The patent discloses a process for producing hydrogen which newly adds steps of introducing any of methanol and mixed fluid of methanol and water into said reactor, and

converting most of said methanol into hydrogen, carbon dioxide and a small amount of carbon monoxide in the case of converting carbon monoxide in mixture gas containing hydrogen, carbon monoxide, carbon dioxide methane, and steam obtained by steam reforming reaction of hydrocarbon or its oxide into hydrogen by steam shift conversion reaction by using a reactor having a catalyst containing copper.

U.S. Patent 5,516,344 issued May 14, 1996 entitled FUEL CELL POWER PLANT FUEL PROCESSING APPARATUS, By Thomas J. Corrigan. The patent discloses an integrated apparatus included within a single vessel a plurality of components for processing fuel in a fuel cell plant. Along with the gas reformer is an air preheater for the burner and a plenum for supplying the shift converter. The shift converter is also in the vessel with upstream steam and fuel heat exchangers. The shift converter heat exchanger is also included.

U.S. Patent 5,546,701 issued August 20, 1996 entitled UNDEROXIDIZED BURNER UTILIZING IMPROVED INJECTORS, By Leonard Greiner et al. The patent discloses injectors for use in an underoxidized burner having a single or double stage internal combustion chamber for receiving gaseous or liquid fuel such as diesel for mixture with air or oxygen and subsequent ignition by a spark plug. The injector includes feed conduits or tubes for simultaneously

conducting air and fuel to a mixing device having a baffle arrangement against which separately injected air and fuel impinge causing a complete air/fuel blending which is ignited, burned and exhausted. The injector may accept effluent gases for mixing with water to produce maximum hydrogen H_2 from fuels. A lamina flow is produced which is folded over and reversed in direction within the combustion chamber.

The undersigned submits the above-identified references for independent consideration by the Examiner and does not make any admission that these references are or are not material to the present invention or that these references are or are not prior art with respect to the present invention.

Respectfully submitted,

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Date: April 18, 2001

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